

DESCRIPTION OF TABLES AND CHARTS.

Table I gives the data ordinarily needed for climatological studies for about 158 Weather Bureau stations making simultaneous observations at 8 a. m. and 8 p. m., daily, 75th Meridian Time, and for about 41 others making only one observation. The altitudes of the instruments above ground are also given.

Table II gives a record of precipitation, the intensity of which at some period of the storm's continuance equaled or exceeded the following rates:

Duration (minutes)	5	10	15	20	25	30	35	40	45	50	60
Rates per hour (inches)	3.00	1.80	1.40	1.20	1.08	1.00	0.94	0.90	0.87	0.84	0.80

It is impracticable to make this table sufficiently wide to accommodate on one line the record of accumulated falls that continue at an excessive rate for several hours. In this case *the record is broken at the end of each 50 minutes*, the accumulated amounts being recorded on successive lines until the successive rate ends.

In cases where no storm of sufficient intensity to entitle it to a place in the full table has occurred the greatest precipitation of any single storm has been given, also the greatest hourly fall during that storm.

The tipping-bucket mechanism is *dismounted* and removed when there is danger of snow or water freezing in the same. Table II records this condition by entering an asterisk (*).

Table III gives, for about 30 stations of the Canadian Meteorological Service, the means of pressure and temperature, total precipitation and depth of snowfall, and the respective departures from normal values except in the case of snowfall.

Chart I.—Hydrographs for several of the principal rivers of the United States.

Chart II.—Tracks of centers of high areas; and

Chart III.—Tracks of centers of low areas. The roman numerals show the chronological order of the centers. The figures within the circles show the days of the month; the letters *a* and *p* indicate, respectively, the observations at 8 a. m. and 8 p. m., 75th Meridian Time. Within each circle is also given (Chart II) the last three figures of the highest barometric reading or (Chart III) the lowest reading reported at or near the center at that time, and in both cases as reduced to sealevel and standard gravity.

Chart IV.—Temperature departures. This chart presents the departures of the monthly mean temperatures from the monthly normals. The normals used in computing the departures were computed for a period of 33 years (1873 to 1905) and are published in Weather Bureau Bulletin "R," Washington, 1908. Stations whose records were too short to justify the preparation of normals in 1908 have been provided with normals as adequate records became available, and all have been reduced to the 33-year interval 1873–1905. The shaded portions of the chart indicate areas of positive departures and unshaded portions indicate areas of negative departures. Generalized lines connect places having approximately

equal departures of like sign. This chart of monthly temperature departures in the United States was first published in the MONTHLY WEATHER REVIEW for July, 1909.

Chart V.—Total precipitation. The scale of shades showing the depth is given on the chart. Where the monthly amounts are too small to justify shading and over sections of the country where stations are too widely separated or the topography is too diversified to warrant reasonable accuracy in shading, the actual depths are given for a limited number of representative stations. Amounts less than 0.005 inch are indicated by the letter T, and no precipitation by 0.

Chart VI.—Percentage of clear sky between sunrise and sunset. The average cloudiness at each Weather Bureau station is determined by numerous personal observations between sunrise and sunset. The difference between the observed cloudiness and 100 is assumed to represent the percentage of clear sky, and the values thus obtained are the basis of this chart. The chart does not relate to the nighttime.

Chart VII.—Isobars and isotherms at sea level and prevailing wind directions. The pressures have been reduced to sealevel and standard gravity by the method described by Prof. Frank H. Bigelow on pages 13–16 of the REVIEW for January, 1902. The pressures have also been reduced to the mean of the 24 hours by the application of a suitable correction to the mean of the 8 a. m. and 8 p. m. readings at stations taking two observations daily, and to the 8 a. m. or the 8 p. m. observation, respectively, at stations taking but a single observation. The diurnal corrections so applied will be found in the Annual Report of the Chief of the Weather Bureau, 1900–1901, volume 2, Table 27, pages 140–164.

The isotherms on the sea-level plane have been constructed by means of the data summarized in chapter 8 of volume 2 of the annual report just mentioned. The correction, $t_0 - t$ or temperature on the sea-level plane minus the station temperature as given by Table 48 of that report, is added to the observed surface temperature to obtain the adopted sealevel temperature.

The prevailing wind directions are determined from hourly observations at the great majority of the stations; a few stations having no self-recording wind-direction apparatus determine the prevailing direction from the daily or twice-daily observations only.

Chart VIII.—Total snowfall. This is based on the reports from regular and cooperative observers and shows the depth in inches and tenths of the snowfall during the month. In general, the depth is shown by lines inclosing areas of equal snowfall, but in special cases figures are also given. Chart VIII is published only when the general snow cover is sufficiently extensive to justify its preparation.

Chart IX.—Average values of pressure, temperature, and prevailing wind directions, and storm tracks over the North Atlantic Ocean, for the corresponding month of last year.

TABLE I.—Climatological data for Weather Bureau Stations, July, 1916.

Districts and stations.	Elevation of instruments.				Pressure.				Temperature of the air.								Precipitation.				Wind.				Average cloudiness.				Snow on ground at end of month.				
	Buoyometer above sea-level.	Thermometer above ground.	Anerometer above ground.	Station, reduced to mean of 24 hours.	Scale, reduced to mean of 24 hours.	In.	In.	Departure from normal.	Mean max+mean minimum.	Date.	Mean maximum.	Mean minimum.	Departure from normal.	Date.	Mean maximum.	Mean minimum.	Departure from normal.	Date.	Mean maximum.	Mean minimum.	Total.	Departure from normal.	Mean temperature of the dew point.	Total movement.	Prevaling direction.	Miles per hour.	Clear days.	Partly cloudy days.	Cloudy days.	In.	In.		
	Ft.	Ft.	Ft.	In.	In.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.			
New England.																																	
Eastport.	74	67	85	29.89	29.97	+0.04	58.8	-1.0	86	12	67	47	8	50	56	51	87	4.87	+1.4	11	0.055	s.	23	s.	4	12	15	7.0					
Greenville.	1,070	6	28.85	29.88		57.4	-0.9	92	20	78	43	2	57	37	53	60	63	60	70	3.82	+0.6	12	6.335	s.	27	nw.	1	8	7	16	6.6		
Portland, Me.	103	82	117	29.87	29.99	+0.04	67.9	-0.1	94	12	76	43	54	60	56	60	63	60	70	4.55	+0.8	12	2.984	s.	20	nw.	1	10	10	11	5.7		
Concord.	288	70	79	29.68	29.98	+0.02	71.6	+2.5	94	12	80	49	1	62	36	63	63	63	62	70	1.67	-2.1	12	7.383	s.	32	s.	16	11	8	12	5.5	
Burlington.	401	11	48	29.55	29.99	+0.04	71.4	+3.2	91	12	80	53	6	57	38	63	63	63	62	70	8.02	+0.3	12	1.233	s.	27	n.	31	5	13	13	6.6	
Northfield.	876	89	97	29.99	29.99	+0.05	68.8	+2.2	90	12	80	44	6	57	38	63	63	63	62	70	5.67	+2.3	16	6.515	sw.	21	ne.	21	7	17	17	6.7	
Boston.	125	115	188	29.86	29.99	+0.03	72.6	+1.3	93	31	80	50	29	29	29	63	63	63	62	70	5.02	+2.3	16	12.170	sw.	50	sw.	21	4	10	17	7.2	
Nantucket.	12	14	90	30.00	30.01	+0.03	65.4	-2.1	82	31	71	53	7	60	19	63	63	63	62	70	7.37	+4.1	16	11.286	sw.	46	e.	21	8	4	19	6.9	
Block Island.	26	11	46	29.97	30.00	+0.03	67.1	-1.0	81	31	72	57	6	63	16	63	63	62	70	10.66	+1.7	17	s.	36	sw.	15	6	10	15	6.6			
Narragansett.	9	10	11	29.87	29.98	+0.03	67.8	-2.1	88	31	74	53	6	62	30	63	63	62	70	6.53	+2.8	16	7.789	sw.	31	nw.	13	4	10	17	7.6		
Providence.	160	215	251	29.83	30.00	+0.03	71.4	-2.0	93	8	79	53	29	27	67	65	63	63	70	8.37	+2.8	16	1.37	sw.	23	s.	1	6	10	15	6.6		
Hartford.	159	120	149	29.82	29.99	+0.02	73.6	+2.0	94	31	82	54	6	59	29	66	63	63	70	3.52	-0.6	12	5.167	s.	29	ne.	21	5	11	15	6.7		
New Haven.	106	117	155	29.89	30.00	+0.03	73.0	+1.1	92	31	81	56	29	65	28	68	63	63	70	3.72	-1.1	15	5.843	s.									
Middle Atlantic States.																																	
Albany.	97	102	115	29.88	29.98	+0.02	74.6	+2.6	95	12	83	53	6	66	32	67	61	75	2.98	-0.9	13	5.375	s.	25	nw.	2	14	8	9	5.0			
Binghamton.	871	10	69	29.99	30.00	+0.03	74.1	+4.2	92	24	81	50	1	64	33	67	71	71	71	2.71	+0.2	11	1.827	e.	18	sw.	3						
New York.	314	414	454	29.98	30.00	+0.02	73.8	+0.3	93	31	81	59	5	67	23	67	65	79	3.43	-1.1	14	9.756	s.	60	sw.	13	4	9	18	7.4			
Harrisburg.	374	94	104	29.62	30.01	+0.03	76.4	+1.9	93	25	83	58	6	68	29	69	73	74	4.48	+0.8	11	4.327	sw.	30	w.	24	6	12	13	6.1			
Philadelphia.	117	123	190	29.90	30.02	+0.04	76.8	+1.0	95	31	84	60	6	70	23	70	67	76	3.40	-0.9	10	6.945	sw.	29	ne.	20	5	10	16	6.8			
Reading.	325	81	98	29.67	30.01		76.2	-0.1	92	12	85	57	6	67	29	69	66	76	12.41	+3.2	14	4.514	se.	29	e.	21	3	10	18	7.4			
Scranton.	806	111	118	29.77	30.02	+0.05	74.2	+2.4	92	12	84	51	6	64	33	67	74	74	2.29	-1.5	12	3.399	sw.	32	w.	2	6	12	13	6.3			
Atlantic City.	52	37	48	29.97	30.02	+0.01	72.4	-0.1	91	31	77	60	5	68	24	64	67	75	4.27	+0.5	11	6.096	sw.	20	ne.	20	8	16	16	6.8			
Cape May.	18	13	49	30.02	30.04	+0.06	73.9	-1.5	88	30	80	56	5	68	21	69	76	76	3.23	-0.2	9	5.994	s.	21	ne.	20	5	10	16	6.9			
Sandy Hook.	22	10	57	29.98	30.00		73.6	-0.1	89	30	80	56	5	68	24	69	76	76	3.23	-0.2	12	9.206	s.	45	n.	20	5	10	16	6.9			
Trenton.	190	159	189	29.80	30.00		74.9	-0.1	92	31	83	58	6	68	26	69	70	70	5.94	+1.2	16	7.419	sw.	36	w.	13	3	10	18	7.7			
Baltimore.	123	109	113	29.88	30.00	+0.02	78.8	-0.1	93	31	85	60	6	71	24	70	67	73	5.04	+0.2	14	5.292	s.	25	ne.	24	6	13	13	6.5			
Washington.	112	62	85	29.88	30.00		77.8	+1.0	95	12	86	60	5	69	27	71	71	71	4.97	+0.3	11	3.865	s.	22	nw.	13	6	11	11	6.5			
Lynchburg.	681	153	188	29.88	30.01		75.4	-0.9	90	23	81	59	5	67	28	69	69	70	5.76	+5.7	12	4.220	w.	57	n.	26	9	15	17	5.6			
Norfolk.	91	170	205	29.93	30.03	+0.03	74.7	-1.0	90	23	81	63	5	67	23	71	71	71	7.05	-2.8	9	0.661	s.	38	ne.	19	7	16	16	5.7			
Richmond.	144	11	52	29.87	30.02	+0.01	77.5	-1.7	91	13	86	62	5	69	24	71	71	71	5.39	+1.0	10	5.521	s.	27	ne.	23	9	12	10	5.7			
Wytheville.	2,293	49	55	27.70	30.00	-0.01	71.3	-1.3	86	28	80	52	5	63	29	63	63	63	8.06	+3.6	16	3.525	e.	26	e.	15	7	15	15	6.9			
South Atlantic States.																																	
Ashville.	2,255	70	84	27.71	29.99	-0.03	72.2	+0.5	84	1	79	61	5	65	21	65	65	77	8.7	2.98	+4.4	22	5.163	se.	36	e.	26	2	16	13	7.4		
Charlotte.	773	153	161	29.19	30.01	-0.01	76.1	+2.7	89	2	84	64	9	65	23	71	71	71	8.5	16.35	+11.1	16	6.981	s.	60	e.	14	5	18	6.1			
Hatteras.	11	12	50	30.02	30.03	+0.02	77.7	-0.9	86	13	82	63	5	73	20	73	73	73	8.2	4.93	-1.2	13	10.321	s.	50	n.	19	5	18	6.1			
Manteo.	12	4	46				75.2	-0.1	89	13	82	63	5	73	19	73	73	73	8.92	4.92	+0.8	10		sw.	16	4	11						
Raleigh.	376	103	110	29.63	30.01	-0.01	77.0	-1.5	90	20	84	64	5	70	21	71	69	71	8.09	+2.0	14	5.374	sw.	31	se.	14	4	13	13	6.9			
Wilmington.	78	81	91	29.93	30.03	+0.02	78.1	-0.6	92	20	84	62	5	66	21	73	73	73	8.53	10.83	+3.9	14	5.432	w.	26	e.	14	4	14	13	6.7		
Charleston.	48	11	92	29.95	30.00	-0.03	79.1	+2.2	93	12	84	63	5	74	19	73	73	73	8.11	11.61	+4.1	16	5.318</td										

TABLE I.—Climatological data for Weather Bureau Stations, July, 1916—Continued.

Districts and stations.	Elevation of instruments.		Pressure.										Temperature of the air.										Precipitation.				Average cloudiness.		Total snowfall.	
	Barometer above sea-level.	Thermometer above ground.	Station, reduced to mean of 24 hours.	Sealevel, reduced to mean of 24 hours.	Departure from normal.	Mean max+mean min.+2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Maximum.	Date.	Mean minimum.	Mean relative humidity.	Total.	Departure from normal.	Days with 0.01 inch or more.	Total movement.	Prevailing direction.	Maximum velocity.	Date.	Clear days.	Partly cloudy days.	Cloudy days.	Snow on ground at end of month.		
	Ft.	Ft.	In.	In.	In.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	%	In.	In.	Miles.		Miles per hour.									
<i>Ohio Valley and Tennessee.</i>																														
Chattanooga.....	762	180	213	29.18	29.98	-0.04	77.2	-0.6	92	3	85	65	52	70	24	71	69	81	13.49	+ 9.6	19	4,782	w.	30	nw.	3	15	13	6.5	
Knoxville.....	996	93	100	28.94	29.97	-0.05	77.8	-1.6	91	1	86	65	59	70	26	70	68	78	6.18	+ 2.3	19	3,106	e.	27	e.	3	13	13	6.9	
Memphis.....	309	76	97	29.54	29.65	-0.05	82.2	+ 1.5	95	27	90	68	58	74	21	74	71	75	1.74	- 1.8	8	4,496	ne.	32	ne.	6	14	9	4.9	
Nashville.....	546	168	191	29.40	28.87	-0.04	78.8	-0.6	92	3	87	66	57	71	23	72	70	75	4.17	- 0.2	9	5,271	ne.	41	nw.	3	13	11	4.9	
Lexington.....	983	193	230	28.94	29.98	-0.03	78.0	+ 1.4	94	27	87	62	44	69	25	71	67	72	1.72	- 2.7	12	6,971	sw.	36	ne.	27	15	10	6.1	
Louisville.....	525	219	255	28.42	29.99	-0.01	80.5	+ 1.9	98	27	90	63	61	71	27	71	67	68	8.08	+ 4.3	11	5,682	n.	52	sw.	2	18	5	3.8	
Evansville.....	431	139	175	29.51	29.97	-0.03	82.0	+ 2.7	90	27	92	67	55	72	25	73	70	79	5.46	+ 1.6	5	5,989	ne.	29	ne.	20	16	12	3.5	
Indianapolis.....	822	184	230	29.13	29.99	-0.01	80.6	+ 4.4	100	27	91	61	47	70	22	70	65	64	2.44	- 1.7	8	6,184	ne.	52	sw.	2	18	12	3.0	
Terre Haute.....	575	96	129	28.38	29.96	-0.01	81.3	+ 1.0	92	27	92	64	19	70	29	71	67	67	1.51	- 1.5	5	4,885	ne.	33	nw.	2	18	12	1.4	
Cincinnati.....	628	11	51	29.32	29.98	-0.02	78.7	+ 4.5	98	27	90	59	55	68	29	70	66	68	1.79	- 1.8	5	3,576	ne.	32	n.	2	17	10	4.9	
Columbus.....	824	173	222	29.14	29.99	-0.01	78.6	+ 3.3	92	27	89	58	44	68	28	70	66	66	0.66	- 3.0	8	5,752	e.	78	sw.	31	23	7	2.4	
Dayton.....	899	181	216	29.03	29.96	-0.01	79.4	+ 3.2	99	27	90	59	46	68	29	70	66	68	0.33	- 3.0	5	5,202	ne.	36	ne.	31	10	18	3.5	
Pittsburgh.....	812	353	410	29.12	30.00	-0.01	76.6	+ 2.0	92	30	85	58	55	65	68	27	67	63	66	3.88	- 0.5	9	6,223	se.	50	nw.	2	10	11	5.7
Elkins.....	1,910	41	50	28.03	30.00	-0.01	72.6	+ 2.1	89	27	84	51	62	65	35	70	65	68	6.29	+ 1.6	12	2,179	se.	23	ne.	27	3	14	7.1	
Parkersburg.....	638	77	84	29.36	30.01	-0.00	77.7	+ 2.1	95	27	88	57	7	68	34	70	67	75	4.92	+ 0.3	11	2,882	se.	36	ne.	27	12	12	4.5	
<i>Lower Lake Region.</i>																												4.0		
Buffalo.....	767	247	280	29.18	29.99	+ 0.02	71.7	+ 4.5	92	19	82	57	1	68	21	67	63	71	2.04	- 1.4	5	9,051	sw.	42	nw.	26	14	10	7	4.5
Canton.....	448	10	61	29.50	29.98	-0.01	72.5	+ 2.0	95	25	83	48	28	62	34	71	60	65	6.95	- 2.2	30	6,996	s.	41	n.	2	21	5	3.2	
Oswego.....	325	76	91	29.26	29.98	+ 0.02	73.4	+ 3.8	92	15	81	54	1	66	22	67	63	73	1.05	- 2.2	3	5,829	s.	33	n.	2	15	10	6	3.6
Rochester.....	523	97	113	29.45	30.00	+ 0.03	75.6	+ 5.2	94	20	85	51	1	68	28	66	62	66	0.89	- 2.2	5	5,372	sw.	30	n.	2	17	10	4	3.7
Syracuse.....	597	67	113	29.37	30.01	+ 0.04	74.8	+ 4.0	93	30	84	53	1	68	26	68	65	77	0.96	- 2.7	5	6,370	s.	37	nw.	2	11	14	6	5.0
Erie.....	714	130	166	28.24	29.99	+ 0.01	75.7	+ 3.9	92	19	83	57	6	68	25	68	64	68	0.39	- 2.8	5	7,585	s.	62	w.	2	13	15	3	4.1
Cleveland.....	762	190	201	29.30	30.00	+ 0.01	75.6	+ 3.1	93	29	83	59	7	68	26	68	64	69	2.48	- 1.1	4	7,009	ne.	44	nw.	2	13	14	4	3.8
Sandusky.....	629	62	103	29.33	30.00	+ 0.01	77.8	+ 4.2	98	30	85	63	6	70	26	68	66	69	0.26	- 3.5	3	6,337	e.	39	nw.	20	17	11	3	3.4
Toledo.....	628	208	24	29.34	30.00	+ 0.01	78.6	+ 4.9	100	30	88	58	10	69	28	69	65	65	0.35	- 2.9	3	7,319	ne.	48	nw.	20	25	6	1	2.4
Fort Wayne.....	558	113	124	29.10	30.00	+ 0.01	78.8	+ 5.3	99	27	90	58	9	67	28	70	66	68	3.59	- 1.9	6	4,420	ne.	40	ne.	13	19	12	0	3.0
Detroit.....	730	218	245	29.24	30.00	+ 0.02	77.9	+ 5.9	98	30	87	58	10	69	25	68	63	64	0.19	- 2.5	1	6,522	e.	38	w.	2	20	11	0	2.8
<i>Upper Lake Region.</i>																												2.9		
Alpena.....	609	13	92	29.36	30.03	+ 0.06	71.3	+ 5.5	101	30	81	47	10	61	37	65	61	69	0.26	- 2.8	6	6,166	se.	39	nw.	2	16	13	2	3.0
Escanaba.....	612	54	62	29.36	30.01	+ 0.01	71.4	+ 4.9	100	30	80	49	9	62	35	65	61	72	2.32	- 1.0	6	6,096	s.	31	n.	2	21	7	3	2.3
Grand Haven.....	632	54	92	29.33	29.97	+ 0.01	75.5	+ 5.8	95	29	85	54	10	66	22	67	63	73	1.05	- 2.2	3	5,829	s.	33	n.	2	15	6	0	1.5
Grand Rapids.....	707	70	87	29.26	30.00	+ 0.03	78.8	+ 6.2	103	29	90	56	10	67	28	69	63	60	1.07	- 1.6	4	3,121	e.	19	w.	2	17	12	0	2.5
Houghton.....	634	62	98	28.98	29.99	+ 0.03	71.0	+ 5.7	100	29	82	54	4	60	27	68	61	70	0.09	- 3.1	2	5,260	w.	21	sw.	2	17	12	0	3.8
Lansing.....	878	11	61	29.08	30.00	+ 0.03	76.1	+ 5.0	102	29	90	52	10	63	33	68	61	70	2.505	- 1.1	2	5,005	e.	21	nw.	2	23	8	0	2.2
Ludington.....	637	60	60	32	30.01	-0.01	72.4	+ 2.4	98	28	81	51	9	64	26	67	63	72	1.54	- 1.4	5	5,965	w.	35	w.	15	24	6	1	2.0
Marquette.....	734	77	111	29.24	30.03	+ 0.07	70.4	+ 5.5	102	29	81	51	9	60	37	63	59	70	1.74	- 1.4	7	5,965	w.	42	w.	19	14	10	7	4.5
Port Huron.....	638	70	120	29.32	30.00	+ 0.02	74.2	+ 7.2	102	30	84	56	4	65	29	67	64	72	2.47	- 0.3	2	5,972	ne.	37	nw.	20	18	13	0	3.0
Saginaw.....	641	48	82	29.34	30.00	+ 0.06	76.8	+ 7.2	103	30	89	54	9	65	31	68	64	65	0.82	- 2.9	4	5,825	s.	38	nw.	22	16	10	5	3.6
Sault Ste. Marie.....	614	11	61	29.34	30.03	+ 0.06	69.0	+ 7.1	98	30	81	48	9	57	28	62	58	71	0.81	- 1.9	5	4,672	w.	34	nw.	30	17	12	2	3.7
Chicago.....	823	140	310	29.10	30.00	+ 0.02	78.4	+ 6.0	102	30	85	56	31	72	26	69	65	66	2.22	- 1.4	6	6,178	n.	28	n.	31	28	2	1	1.2
Green Bay.....	617	109	144	29.34	29.99	+ 0.02	76.4	+ 6.9	101	29	87	55	10	66	31	68	65	72	2.32	- 1.1	6	6,330	s.	34	nw.	22	25	6	0	4.4
Milwaukee.....	681	119	133	29.																										

TABLE I.—Climatological data for Weather Bureau Stations, July, 1916—Continued.

Districts and stations.	Elevation of instruments.			Pressure.		Temperature of the air.												Precipitation.			Wind.						
	Barometer above sea-level.	Thermometer above ground.	Anerometer above ground.	Station, reduced to mean of 24 hours.	Sealevel, reduced to mean of 24 hours.	Departure from normal.	Mean max.+mean min.	Max.	Mean maximum.	Date.	Mean minimum.	Date.	Mean minimum.	Max.	Mean relative humidity.	Total.	In. 2.01 + 0.4	Miles.	Total movement.	Prevailing direction.	Miles per hour.	Date.	Clear days.	Partly cloudy days.	Cloudy days.	Average cloudiness.	Total snowfall.
	Ft.	Ft.	Ft.	In.	In.	In.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	%	In. 55	In. 55	In.	Direction.	Direction.	Direction.	0-10 In.	In.	In.	In.	In.	
<i>Northern Slope.</i>							70.2 + 2.1	71.6 + 2.3	68.3 + 0.2	98.2 + 1.3	89.1 + 0.4	40.5 + 0.4	49.5 + 0.4	49.5 + 0.4	54.5 + 0.4	3.13	5.707	sw.	48	sw.	2	19	10	2	5.3	3.3	
Billings.....	3,140	5	27.30	29.88	-0.03	68.3	67.2 + 0.6	93.2	92.1 + 0.6	81.1	46.3 + 0.4	37.5 + 0.4	60.5 + 0.4	69.5 + 0.4	54.5 + 0.4	69.5 + 0.4	13.6, 400	sw.	51	sw.	2	17	13	1	3.4		
Havre.....	2,505	11	44	27.30	29.88	-0.03	67.2	67.2 + 0.6	93.2	91.1 + 0.6	81.1	44.4 + 0.4	38.5 + 0.4	54.4 + 0.4	63.4 + 0.4	53.4 + 0.4	63.4 + 0.4	12.3, 522	sw.	45	sw.	7	16	11	4	4.1	
Helena.....	4,110	87	114	25.80	29.90	-0.03	67.2	67.2 + 0.6	93.2	91.1 + 0.6	81.1	44.4 + 0.4	39.5 + 0.4	54.4 + 0.4	63.4 + 0.4	53.4 + 0.4	63.4 + 0.4	2.6, 289	ne.	40	ne.	7	25	6	0	1.8	
Kalispell.....	2,982	11	34	26.90	29.91	-0.02	62.7	61.6 + 0.6	91.2	76.7 + 0.6	76.7	41.9 + 0.4	39.5 + 0.4	47.4 + 0.4	56.4 + 0.4	47.4 + 0.4	56.4 + 0.4	1.2, 482	sw.	30	nw.	6	17	13	1	3.5	
Miles City.....	2,371	28	48	27.41	29.89	-0.03	77.1	77.1 + 4.2	104.1	93.1 + 5.2	91.1	52.9 + 4.6	44.6 + 4.6	65.5 + 4.6	80.6 + 4.6	55.5 + 4.6	62.5 + 4.6	1.2, 482	sw.	39	nw.	3	11	15	5	4.4	
Rapid City.....	3,259	50	58	26.60	29.92	-0.01	74.8	74.8 + 4.6	99.9	27.8 + 5.2	51.9 + 4.6	40.6 + 4.6	62.5 + 4.6	55.5 + 4.6	48.4 + 4.6	1.81 + 0.2	8, 7,273	nw.	34	sw.	24	13	17	1	4.2		
Cheyenne.....	6,088	84	101	24.10	29.91	-0.01	69.1	69.1 + 1.7	88.8	2.8 + 2.2	82.0 + 2.0	56.0 + 2.0	37.5 + 2.0	55.5 + 2.0	48.4 + 2.0	0.33 + 0.5	5, 1,034	sw.	34	sw.	3	20	6	5	3.0		
Lander.....	5,372	60	68	24.63	29.88	-0.03	70.8	70.8 + 2.8	96.9	5.5 + 3.8	40.4 + 2.8	54.5 + 2.8	38.4 + 2.8	59.5 + 2.8	57.5 + 2.8	0.58 + 2.1	5, 7,21	se.	34	nw.	31	nw.	25	22	5	4.2	
Sheridan.....	3,790	10	47	26.09	29.91	-0.03	70.8	70.8 + 2.8	96.9	13.8 + 2.8	42.1 + 2.8	54.5 + 2.8	38.4 + 2.8	59.5 + 2.8	57.5 + 2.8	0.59 + 2.1	5, 3,731	se.	34	nw.	31	nw.	23	24	6	1.0	
Yellowstone Park.....	6,200	11	48	23.95	29.93	+ 0.01	61.8	61.8 + 0.3	88.7	7.7 + 0.4	40.19 + 0.4	44.4 + 0.4	48.39 + 0.4	52.52 + 0.4	57.52 + 0.4	1.94 + 0.8	5, 5,559	s.	36	s.	25	22	5	4	2.9		
North Platte.....	2,821	11	51	27.08	29.93	+ 0.00	80.0	80.0 + 6.1	100.15	9.9 + 6.0	60.20 + 6.0	66.37 + 6.0	59.59 + 6.0	57.57 + 6.0	57.57 + 6.0	0.59 + 2.1	5, 9,944	se.	31	nw.	23	nw.	23	24	6	1.0	
<i>Middle Slope.</i>							79.4 + 2.7									55	1.02 + 2.0									3.0	
Denver.....	5,292	106	113	24.80	29.92	+ 0.01	74.1	74.1 + 2.3	96.9	2.87 + 1.9	57.13 + 1.9	62.02 + 1.9	36.57 + 1.9	47.47 + 1.9	46.47 + 1.9	1.44 + 0.2	9, 5,161	se.	34	nw.	1	14	13	4	4.3		
Pueblo.....	4,635	80	86	25.32	29.89	-0.02	76.1	76.1 + 1.9	100.1	2.92 + 1.9	55.13 + 1.9	61.01 + 1.9	30.58 + 1.9	47.47 + 1.9	46.47 + 1.9	0.83 + 1.1	8, 4,242	nw.	30	nw.	27	17	11	3	3.5		
Concordia.....	1,392	50	58	28.52	29.95	-0.01	80.1	80.1 + 2.1	98.9	18.93 + 2.1	60.21 + 2.1	70.30 + 2.1	30.64 + 2.1	46.46 + 2.1	46.46 + 2.1	0.82 + 2.8	3, 4,910	s.	34	nw.	19	19	10	2	2.9		
Dodge.....	2,509	11	51	27.39	29.92	-0.01	80.3	80.3 + 2.6	98.9	18.94 + 2.6	60.22 + 2.6	70.34 + 2.6	30.66 + 2.6	46.46 + 2.6	46.46 + 2.6	0.99 + 3.3	1, 6,766	s.	27	se.	3	22	9	0	2.4		
Wichita.....	1,358	139	158	28.53	29.92	-0.04	83.0	83.0 + 4.0	99.9	31.94 + 4.0	62.72 + 4.0	72.26 + 4.0	30.63 + 4.0	46.46 + 4.0	46.46 + 4.0	0.10 + 3.5	1, 6,567	s.	34	n.	19	24	7	0	2.6		
Altus.....	1,410	5	5	.....	.....	.....	84.2	.....	111.1	19.98 + 1.5	65.25 + 1.5	79.34 + 1.5	39.45 + 1.5	46.46 + 1.5	46.46 + 1.5	1.22 + 1.1	2	ne.	.....	.....	26	4	1	1	1	
Muskogee.....	852	4	4	.....	.....	.....	104.1	104.1 + 2.2	101.1	19.94 + 2.2	65.25 + 2.2	79.34 + 2.2	39.45 + 2.2	46.46 + 2.2	46.46 + 2.2	0.85 + 2.2	2	n.	.....	.....	29	0	2	1	1	
Oklahoma.....	1,214	10	47	28.70	29.94	-0.00	82.0	82.0 + 2.2	101.1	19.94 + 2.2	65.25 + 2.2	79.34 + 2.2	39.45 + 2.2	46.46 + 2.2	46.46 + 2.2	0.00 + 2.1	3, 5,883	s.	42	n.	19	23	6	2	2.4		
<i>Southern Slope.</i>							80.8 + 0.2									52	1.17 + 1.6									4.2	
Abilene.....	1,738	10	52	28.14	29.90	-0.03	82.9	82.9 + 0.7	103.1	19.95 + 0.7	63.7 + 0.7	71.7 + 0.7	33.08 + 0.7	41.54 + 0.7	35.52 + 0.7	0.68 + 1.7	5, 5,333	s.	44	sw.	15	12	11	8	4.9		
Amarillo.....	3,676	10	49	26.30	29.94	+ 0.02	70.2	70.2 + 0.9	100.3	3.93 + 0.9	61.61 + 0.9	73.63 + 0.9	32.55 + 0.9	41.52 + 0.9	39.52 + 0.9	0.94 + 2.2	5, 6,850	s.	25	sw.	27	19	12	0	3.1		
Del Rio.....	944	64	71	28.91	29.88	-0.02	83.2	83.2 + 1.5	99.9	23.98 + 1.5	68.57 + 1.5	74.23 + 1.5	32.55 + 1.5	41.51 + 1.5	39.51 + 1.5	2.03 + 0.2	6, 6,420	e.	39	e.	30	10	15	6	5.0		
Roswell.....	3,566	75	85	28.37	29.89	+ 0.01	77.8	77.8 + 1.1	100.100	3.91 + 1.1	60.60 + 1.1	65.65 + 1.1	32.52 + 1.1	41.51 + 1.1	39.51 + 1.1	1.04 + 2.4	5, 5,743	se.	41	e.	4	12	17	3	3.9		
<i>Southern Plateau.</i>							78.0 + 1.0									47	1.01 + 0.2									3.6	
El Paso.....	3,762	110	133	26.15	29.80	-0.04	81.3	81.3 + 0.8	104.1	4.93 + 0.8	63.63 + 0.8	70.32 + 0.8	32.63 + 0.8	44.52 + 0.8	35.51 + 0.8	0.59 + 1.5	3, 8,278	se.	41	se.	29	12	18	1	4.2		
Santa Fe.....	7,013	57	66	23.37	29.88	-0.00	68.5	68.5 + 0.1	90.1	4.79 + 0.1	52.52 + 0.1	58.32 + 0.1	32.54 + 0.1	47.47 + 0.1	35.55 + 0.1	2.77 + 0.1	18, 5,201	se.	33	se.	5	2	26	3	3.5		
Flagstaff.....	6,908	8	57	23.43	29.84	+ 0.01	61.2	61.2 + 0.8	85.5	7.79 + 0.8	59.3 + 0.8	73.50 + 0.8	34.51 + 0.8	41.41 + 0.8	39.43 + 0.8	2.40 + 0.2	13	sw.	40	w.	26	6	24	1	1		
Phoenix.....	1,108	76	81	28.63	29.74	-0.04	89.0	89.0 + 1.4	110.1	6.103 + 1.4	64.64 + 1.4	75.41 + 1.4	49.55 + 1.4	59.59 + 1.4	47.47 + 1.4	0.77 + 0.3	5, 4,051	e.	38	e.	11	20	9	2	3.0		
Yuma.....	141	9	54	29.57	29.71	-0.05	90.2	90.2 + 0.7	113.1	6.105 + 0.7	65.55 + 0.7	75.44 + 0.7	44.52 + 0.7	52.53 + 0.7	47.47 + 0.7	0.92 + 0.8	1, 4,215	sw.	35	e.	11	26	4	1	1.6		
Independence.....	3,910	11	42	25.91	29.80	-0.03	74.4	74.4 + 1.1	103.1	23.93 + 1.1	45.45 + 1.1	58.58 + 1.1	36.55 + 1.1	40.40 + 1.1	37.47 + 1.1	0.00 + 0.1	0, 4,556	se.	22	se.	7	29	2	0	0		
<i>Middle Plateau.</i>							72.1 + 0.7									36	1.04 + 0.6									2.3	
Baker.....	4,532	74	81	25.45	29.86	-0.01	68.4	68.4 + 0.9	98.9	22.86 + 0.9	41.27 + 0.9	50.43 + 0.9	33.35 + 0.9	44.44 + 0.9	35.51 + 0.9	0.59 + 1.5	3, 8,278	se.	33	w.	12	30	1	0	0.5		
Tonopah.....	6,090	12	20	24.09	29.86	-0.02	72.2	72.2 + 0.9	98.9	23.84 + 0.9	48.3 + 0.9	50.30 + 0.9	34.30 + 0.9	42.40 + 0.9	35.40 + 0.9	0.13 + 0.2	1, 6,375	se.	35	sw.	7	27	3	1	1.2		
Winnemucca.....	4,344	18	58	25.58	29.89	-0.01	69.3	69.3 + 2.3	100.1	12.83 + 2.3	53.36 + 2.3	50.50 + 2.3	34.51 + 2.3	49.49 + 2.3	39.53 + 2.3	0.01 + 0.2	1, 4,643	sw.	35	sw.	7	27	2	1	0.8		
Modena.....	5,479	10	43	21.61	29.86	-0.00	69.2	69.2 + 0.5	98.9	20.89 + 0.5	42.3 + 0.5	43.53 + 0.5	39.45 + 0.5	47.47 + 0.5	37.51 + 0.5	0.01 + 0.2	10, 7,519	sw.	48	s.	28	14	15	2	3.5		
Salt Lake City.....	1,390	147	189	25.59	29.86	-0.04	76.8	76.8 + 0.6	99.9	20.89 +																	

TABLE II.—Accumulated amounts of precipitation for each 5 minutes, for the principal storms in which the rate of fall equaled or exceeded 0.25 inch in any 5 minutes, or 0.80 in 1 hour, during July, 1916, at all stations furnished with self-registering gages.

Stations.	Date.	Total duration.		Total amount of precipitation.	Excessive rate.		Amount before excessive began.	Depths of precipitation (in inches) during periods of time indicated.												
		From—	To—		Began—	Ended—		5 min.	10 min.	15 min.	20 min.	25 min.	30 min.	35 min.	40 min.	45 min.	50 min.	60 min.	80 min.	100 min.	120 min.
Abilene, Tex.	29			0.27																0.19
Albany, N. Y.	2-3			0.91																.35
Alpena, Mich.	1			0.09																.09
Amarillo, Tex.	29	4:30 p. m.	6:24 p. m.	0.72	4:45 p. m.	5:15 p. m.	0.02	0.24	0.36	0.40	0.46	0.57	0.67							
Anniston, Ala.	6	1:45 a. m.	6:35 a. m.	8.13	11:31 a. m.	11:54 a. m.	.94	.14	.20	.41	.57	.67								
	12	3:23 p. m.	6:38 p. m.	0.79	3:32 p. m.	5:11 p. m.	2.19	.06	.18	.24	.29	.45	.63	0.69	0.85					
	13	3:55 p. m.	5:35 p. m.	0.63	4:08 p. m.	4:28 p. m.	.01	.23	.39	.54	.66	.69								
Asheville, N. C.	8-10			3.70																*
Atlanta, Ga.	6-9			7.29																.69
Atlantic City, N. J.	25			0.69																.32
Augusta, Ga.	4	5:20 p. m.	7:25 p. m.	1.32	5:23 p. m.	5:50 p. m.	.01	.12	.29	.47	.54	.86	1.16	1.23						
	6-7	7:10 p. m.	D. N. a. m.	1.05	8:11 p. m.	8:31 p. m.	.23	.20	.35	.51	.59									
Baker, Oreg.	29	7:05 a. m.	11:50 a. m.	0.91	7:17 a. m.	7:40 a. m.	.06	.07	.16	.30	.47	.55								.35
Baltimore, Md.	24-25			1.88																*
Bentonville, Ark.	4	4:55 p. m.	7:35 p. m.	1.96	4:58 p. m.	5:28 p. m.	.01	.46	.89	1.22	1.32	1.72	1.84							
Binghamton, N. Y.	25-26		3:42 p. m.	4:35 p. m.	0.98	3:44 p. m.	4:08 p. m.	.01	.44	.80	.85	.92	.94							.40
Birmingham, Ala.	5-7	8:58 p. m.	11:32 a. m.	10.12	8:30 a. m.	10:46 a. m.	7.53	.08	.29	.46	.50	.56	.63	.77	.99	1.08	1.13			
	14	4:42 p. m.	6:49 p. m.	0.67	5:18 p. m.	5:43 p. m.	.01	1.17	1.21	1.24	1.29	1.43	1.63	1.89	1.76	1.84	1.94			
	16	7:18 p. m.	D. N. a. m.	0.76	7:50 p. m.	8:13 p. m.	.01	.17	.38	.56	.64	.69								
Bismarck, N. Dak.	17	D. N. a. m.	7:17 a. m.	1.74	3:41 a. m.	4:21 a. m.	.02	.11	.34	.80	1.17	1.29	1.41	1.51	1.59					
Block Island, R. I.	17	12:50 a. m.	3:10 a. m.	1.40	2:00 a. m.	2:23 a. m.	.17	.25	.55	.97	1.11									
Boise, Idaho	3	1:40 a. m.	8:05 a. m.	0.94	2:13 a. m.	2:31 a. m.	.02	.13	.34	.46	.52									.21
Boston, Mass.	3	3:55 p. m.	6:15 p. m.	1.71	4:34 p. m.	5:05 p. m.	.17	.28	.50	.72	1.13	1.18	1.33	1.34						
Buffalo, N. Y.	2	5:25 p. m.	6:00 p. m.	0.76	5:29 p. m.	5:43 p. m.	.01	.42	.68	.73										
Burlington, Vt.	22	1:46 p. m.	2:17 p. m.	0.46	1:46 p. m.	1:58 p. m.	.00	.19	.41	.45										
Cairo, Ill.	6			0.13																.13
Canton, N. Y.	16			0.36																.33
Charles City, Iowa	3	3:40 a. m.	4:45 a. m.	0.94	4:18 a. m.	4:33 a. m.	.15	.12	.28	.38	.53	.58								
Charleston, S. C.	5	4:50 p. m.	6:12 p. m.	0.61	5:36 p. m.	5:58 p. m.	.03	.09	.24	.39	.53	.58								
	23	D. N. a. m.	2:10 p. m.	2.18	8:12 a. m.	8:33 a. m.	.59	.10	.29	.45	.62	.64								
	23	5:26 p. m.	8:10 p. m.	0.91	5:26 p. m.	5:47 p. m.	.00	.16	.55	.78	.88	.91								
	4	5:30 p. m.	8:10 p. m.	1.50	5:34 p. m.	5:59 p. m.	.01	.32	.58	.89	1.25	1.48								
	9	5:30 a. m.	8:00 a. m.	0.92	8:15 a. m.	7:25 a. m.	.08	.08	.12	.19	.28	.39	.50	.70	.80					
Charlotte, N. C.	14-15	1:28 p. m.	7:30 p. m.	5.73	4:07 a. m.	5:37 a. m.	1.27	.05	.10	.19	.27	.32	.37	.43	.55	.63	.72	.84		
	22	2:30 p. m.	3:42 p. m.	0.72	2:54 p. m.	3:06 p. m.	.08	.20	.45	.50										
	23	6:03 p. m.	9:15 p. m.	0.82	6:08 p. m.	6:28 p. m.	.01	.24	.45	.59	.68									
	23-24	D. N. p. m.	2:15 p. m.	2.82	6:35 p. m.	7:45 a. m.	1.04	.03	.16	.23	.29	.37	.47	.54	.60	.69	.81	1.06	1.30	
Chattanooga, Tenn.	27	3:53 p. m.	5:36 p. m.	0.45	4:01 p. m.	4:13 p. m.	.01	.12	.33	.40										
Cheyenne, Wyo.	29	1:04 p. m.	3:20 p. m.	0.90	1:19 p. m.	1:25 p. m.	.01	.27	.31											
Chicago, Ill.	19	11:24 a. m.	12:29 p. m.	1.13	11:36 a. m.	12:12 p. m.	.01	.12	.16	.21	.36	.79	.90	1.05	1.08					
Cincinnati, Ohio	20	10:31 a. m.	10:58 a. m.	0.47	10:35 a. m.	10:52 a. m.	.01	.23	.38	.44	.46									
Cleveland, Ohio	20	4:18 p. m.	5:48 p. m.	0.68	4:19 p. m.	4:34 p. m.	.08	.13	.33	.56										
	20	6:20 p. m.	8:32 p. m.	0.96	6:38 p. m.	6:58 p. m.	.04	.36	.62	.78	.85									
Columbia, Mo.	17			0.53																.49
Columbia, S. C.	24			0.22																.49
Columbus, Ohio	31			1.91																.21
Concord, N. H.	2	6:29 p. m.	7:14 p. m.	0.94	6:49 p. m.	7:05 p. m.	T	0.27	0.68	0.91	0.94									
Concordia, Kans.	13			0.71																.58
Corpus Christi, Tex.	21	5:02 p. m.	8:35 p. m.	1.50	5:02 p. m.	5:50 p. m.	.00	.18	.48	.68	.83	.92	1.01	1.21	1.38	1.44	1.49			
Davenport, Iowa	23			0.36																.34
Dayton, Ohio	31			0.10																.09
Del Rio, Tex.	14	11:35 a. m.	2:10 p. m.	1.01	11:37 a. m.	12:07 p. m.	.02	.17	.34	.45	.57	.67	.85							
Denver, Colo.	20			0.76																*
Des Moines, Iowa	13	3:07 p. m.	5:40 p. m.	0.95	4:28 p. m.	4:48 p. m.	.45	.12	.23	.30	.48									
Detroit, Mich.	2	1:50 p. m.	2:40 p. m.	0.95	1:55 p. m.	2:25 p. m.	†	.01	.24	.37	.44	.60	.67	.94						
Devils Lake, N. Dak.	6	7:40 p. m.	D. N. p. m.	1.30	7:59 p. m.	8:32 p. m.	.02	.19	.38	.59	.81	.96	1.01	1.06						
Dodge City, Kans.	13			0.09																.09
Dubuque, Iowa	19			0.41																.35
Duluth, Minn.	10	9:25 p. m.	D. N. p. m.	0.61	9:28 p. m.	9:40 p. m.	.01	.22	.47											
Eastport, Me.	17	D. N. a. m.	5:10 a. m.	1.09	3:55 a. m.	4:21 a. m.	.03	.20	.56	.76	.82	.89	.90							
Elkins, W. Va.	2-3	10:00 p. m.	D. N. a. m.	2.53	10:09 p. m.	12:07 a. m.	.00	.09	.11	.13	.27	.49	.62	.74	.86	1.01	1.02	1.03	1.19	2.12
El Paso, Tex.	6			0.43																.36
Erie, Pa.	2			0.32																.32
Escanaba, Mich.	15	3:25 p. m.	4:25 p. m.	0.65	3:50 p. m.	4:18 p. m.	.11	.15	.17	.22	.32	.44	.52							
Eureka, Cal.	15-16	4:50 p. m.	6:30 p. m.	1.18	5:10 p. m.	5:25 p. m.	.01	.22	.54	.63										.17
Evansville, Ind.	12	10:15 a. m.	8:00 p. m.	1.43	10:22 a. m.	10:58 a. m.	.01	.15	.26	.38	.49	.59	.65	.74	.77					
Flagstaff, Ariz.	20-21	10:40 p. m.	6:10 a. m.	3.59	11:17 p. m.	12:11 a. m.	.23	.18	.43	.60	.86	1.25	1.61	1.90	2.19	2.41	2.59	2.79		*
Fort Smith, Ark.	19			0.13																.13
Fort Wayne, Ind.	13	1:00 p. m.	3:00 p. m.	0.65	1:06 p. m.	1:33 p. m.	.01	.07	.30	.39	.46	.53	.57							
Fort Worth, Tex.	14	2:00 p. m.	5:15 p. m.	2.28	2:21 p. m.	2:56 p. m.	.01	.35	.60	.85	1.04	1.83	2.01	2.21						
Fresno, Calif.	1	5:14 p. m.	3:55 p. m.	0.56	3:18 p. m.	3:33 p. m.	.01	* .55											T.	
Galveston, Tex.	8	12:56 p. m.	1:35 p. m.	0.80	1:07 p. m.	1:22 p. m.	.01	.06	.54	.79										
Grand Haven, Mich.	29	7:18 a. m.	1:55 p. m.	1.51	10:54 a. m.	11:27 a. m.	.29	.27	.47	.60	.71	.91	1.13	1.18						.09
Grand Junction, Colo.	25			0.33																.24
Grand Rapids, Mich.	8	1:10 p. m.	1:42 p. m.	0.69	1:10 p. m.	1:26 p. m.	.00	.37	.49	.67	.69									.05
Green Bay, Wis.	16	1:25 a. m.	2:30 a. m.	0.87	1:31 a. m.	2:06 a. m.	.01	.10	.21	.24	.29	.37	.60	.79						
Hannibal, Mo.	3			0.05																
Harrisburg, Pa.	21-22	6:06 p. m.	5:05 a. m.	1.46	8:00 p. m.	8:16 p. m.	.42	.15	.41	.57	.62									
Hartford, Conn.	2-3	11:30 p. m.	D. N. a. m.	0.98	11:46 p. m.	12:11 a. m.	.01	.22	.32	.50	.68	.72								
Hatteras, N. C.	13	1:25 p. m.	3:00 p. m.	0.82	1:48 p. m.	2:09 p. m.	.02	.08	.16	.45	.70	.77								
	26	3:37 p. m.	3:58 p. m.	0.36	3:41 p. m.	3:49 p. m.	.01	.19	.34											
	2	6:35 p. m.	7:40 p. m.	0.99	6:38 p. m.	7:01 p. m.	T	.30	.48	.70	.88</td									

* Self-register not working.

~~t Record partly estimated.~~

† No precipitation occurred during month.

JULY, 1916.

MONTHLY WEATHER REVIEW.

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TABLE II.—Accumulated amounts of precipitation for each 5 minutes, for the principal storms in which the rate of fall equaled or exceeded 0.25 inch in any 5 minutes, or 0.80 in 1 hour, during July, 1916, at all stations furnished with self-registering gages—Continued.

Stations.	Date.	Total duration.		Total amount of precipitation.	Excessive rate.		Amount before excessive rate began.	Depths of precipitation (in inches) during periods of time indicated.													
		From—	To—		Began—	Ended—		5 min.	10 min.	15 min.	20 min.	25 min.	30 min.	35 min.	40 min.	45 min.	50 min.	60 min.	80 min.	100 min.	120 min.
Helena, Mont.	17	1:26 p. m.	2:47 p. m.	0.82	1:28 p. m.	1:42 p. m.	.01	.26	.60	.76											
Houghton, Mich.	27			0.67																	.41
	3	12:21 p. m.	2:47 p. m.	0.85	12:30 p. m.	12:44 p. m.	.01	.33	.59	.71											
Houston, Tex.	4	5:40 p. m.	10:45 p. m.	1.03	6:51 p. m.	7:05 p. m.	.01	.29	.61	.74											
	11	12:05 p. m.	1:10 p. m.	0.86	12:07 p. m.	12:31 p. m.	.01	.15	.40	.64	.77	.83									
Huron, S. Dak.	18	2:55 p. m.	4:30 p. m.	2.85	3:01 p. m.	3:49 p. m.	.01	.32	.52	.74	1.20	1.64	2.12	2.37	2.52	2.61	2.67				.46
Independence, Cal.	16			0.59																	
Indianapolis, Ind.	2	4:52 p. m.	6:40 p. m.	0.81	6:01 p. m.	6:12 p. m.	.22	.34	.54	.55											
Iola, Kans.	18-19	T.	1:21 p. m.	1.22	12:55 p. m.	1:32 p. m.	.01	.14	.23	.30	.58	.85	1.03	1.15	1.17						T.
Jacksonville, Fla.	11	12:40 p. m.	1:55 p. m.	0.18																	.15
Kalispell, Mont.	7			0.36																	.36
Kansas City, Mo.	17			0.07																	.05
Keokuk, Iowa	3																				
	10	5:00 p. m.	7:15 p. m.	1.02	5:28 p. m.	5:51 p. m.	.01	.18	.41	.66	.82	.88									
	24	9:09 a. m.	9:45 a. m.	0.54	9:15 a. m.	9:29 a. m.	.02	.23	.14	.50											
Key West, Fla.	27-28	D. N. p. m.	12:50 p. m.	7.26																	
					3:48 a. m.																
Knoxville, Tenn.	17	11:43 a. m.	12:40 p. m.	1.02	*	*															
	21	12:47 p. m.	1:25 p. m.	1.03	*	*															
La Crosse, Wis.	14-15	10:50 a. m.	10:55 a. m.	0.71	11:25 a. m.	11:58 a. m.	.01	.05	.11	.30	.44	.52	.61	.66							
Lander, Wyo.	28				D. N. a. m.	12:28 p. m.	.17	.20	.28	.28	.33	.49	.65								.14
Lansing, Mich.	13			0.14																	.05
Lewiston, Idaho	2			0.57																	.34
Lexington, Ky.	12	8:35 a. m.	10:20 a. m.	0.62	8:39 a. m.	9:01 a. m.	.01	.11	.24	.38	.44	.47									
Lincoln, Nebr.	16	2:11 p. m.	4:02 p. m.	0.90	2:18 p. m.	2:58 p. m.	.01	.11	.19	.20	.28	.44	.65	.74	.78						
Little Rock, Ark.	12			0.15																	
Los Angeles, Calif.	12	11:56 a. m.	3:50 p. m.	1.32	12:02 p. m.	12:32 p. m.	.01	.17	.29	.33	.38	.75	.96								
Louisville, Ky.	12-13	9:35 p. m.	9:38 a. m.	3.83	9:59 p. m.	10:06 p. m.	.04	.11	.17	.21	.23	.24	.35	.64	.89	1.05	1.23	1.31	1.53		
	20	2:16 p. m.	7:00 p. m.	1.22	4:12 a. m.	4:24 a. m.	.24	.17	.38	.50											
Ludington, Mich.	15-16	11:28 p. m.	D. N. a. m.	1.92	11:30 p. m.	11:50 p. m.	.01	.12	.38	.71	.88										
Lynchburg, Va.	24-25	8:05 a. m.	8:20 a. m.	2.09	9:28 a. m.	11:08 a. m.	.01	.08	.18	.31	.42	.54	.65	.77	.89	1.00	1.15	1.51	1.74	2.07	
	26	4:50 p. m.	6:10 p. m.	0.81	5:03 p. m.	5:35 p. m.	.01	.18	.30	.40	.44	.63	.84	.90	.93	.94	.96	1.17			
	3	2:49 p. m.	3:10 p. m.	0.60	2:49 p. m.	3:09 p. m.	.00	.18	.26	.52	.59										
	6	2:03 p. m.	3:55 p. m.	1.44	2:49 p. m.	3:10 p. m.	.03	.23	.67	.96	1.06	1.09									
Macon, Ga.	10	12:20 p. m.	1:35 p. m.	0.66	12:29 p. m.	12:42 p. m.	.00	.21	.43	.52											
	18	12:42 p. m.	3:20 p. m.	3.35	12:42 p. m.	1:45 p. m.	.00	.21	.35	.47	.60	.74	1.18	1.80	2.31	2.70	2.88	3.11	3.32		
	23	D. N. a. m.	6:28 a. m.	0.70	3:43 a. m.	4:09 a. m.	.03	.10	.24	.34	.49	.55									
Madison, Wis.	16	5:15 a. m.	6:30 a. m.	0.90	5:25 a. m.	5:40 a. m.	.01	.28	.47	.60											
Marquette, Mich.	19-20	10:35 p. m.	2:05 a. m.	1.31	10:44 p. m.	11:24 p. m.	.01	.07	.33	.60	.74	.86	.94	1.00	1.05						
Memphis, Tenn.	21	2:23 p. m.	5:24 p. m.	0.66	3:32 p. m.	3:44 p. m.	.02	.26	.53	.58											
	17	4:30 p. m.	5:05 p. m.	0.47	4:36 p. m.	4:51 p. m.	.03	.10	.29	.39											
Meridian, Miss.	18	12:47 p. m.	3:45 p. m.	0.77	12:55 p. m.	1:30 p. m.	.01	.11	.28	.36	.43	.49	.59	.65							
	20	12:36 p. m.	4:30 p. m.	1.29	12:40 p. m.	1:14 p. m.	.01	.09	.33	.49	.64	.77	.83	.88							
Miami, Fla.	7	11:58 a. m.	12:50 p. m.	0.76	12 m.	12:25 p. m.	.01	.19	.31	.49	.59	.68									
Milwaukee, Wis.	22	7:10 p. m.	9:15 p. m.	0.76	7:33 p. m.	7:52 p. m.	.11	.24	.35	.40	.48										
Minneapolis, Minn.	14-15			0.59																	.25
	5-6	D. N. a. m.	11:45 a. m.	8.50	10:11 p. m.			4.34	.05	.12	.19	.25	.28	.32	.37	.40	.51	.61			
	7	D. N. a. m.	6:42 p. m.	4.99	12:38 p. m.	1:52 p. m.	1.49	.07	.18	.24											
	11	12:02 p. m.	5:35 p. m.	1.91	12:12 p. m.	1:13 p. m.	.01	.20	.26	.30	.37	.38	.40	.55							
	14	12:43 p. m.	4:50 p. m.	2.10	12:48 p. m.	1:13 p. m.	.01	.11	.29	.50	.78	.98									
	23	12:51 p. m.	4:05 p. m.	0.93	1:04 p. m.	1:31 p. m.	1.02	.18	.48	.80	1.04	1.06									
Modena, Utah	16	12:19 p. m.	5:02 p. m.	1.50	2:10 p. m.	3:30 p. m.	.16	.05	.06	.07	.08	.18	.24	.25	.31	.43	.45	.69	1.21		
	27	3:34 p. m.	4:02 p. m.	1.06	3:38 p. m.	3:57 p. m.	T.	.27	.57	.95	1.06										
	5-8	4:15 p. m.	D. N. a. m.	8.14	10:06 a. m. ¹	10:28 a. m. ¹	1.77	.18	.24	.37	.50	.55									
	Montgomery, Ala.	11	10:19 a. m.	11:20 a. m.	0.52	10:22 a. m.	10:41 a. m.	0.01	.28												
	15	6:35 p. m.	10:30 p. m.	1.48	7:58 p. m.	8:37 p. m.	0.60	.21	.40	.54	.65	.70	.74	.79	.86						
	6-7	11:45 p. m.	3:10 a. m.	1.71	11:47 p. m.	12:15 a. m.	.01	.32	.78	.92	1.09	1.18	1.23								
	18-19	7:45 p. m.	1:15 a. m.	1.90	8:21 p. m.	8:55 p. m.	.06	.16	.40	.80	1.07	1.24	1.31	1.37							
	21	6:40 a. m.	7:05 a. m.	0.58	6:48 p. m.	7:01 a. m.	.02	.12	.46	.56											
Mount Tamalpais, Cal.	1		0.09																		.03
Nantucket, Mass.	3	4:45 a. m.	10:10 a. m.	1.79	4:57 a. m.	8:00 a. m.	.04	.13	.19	.28	.37	.50	.65	.84	.99	1.07	1.13	1.23	1.31		
Nashville, Tenn.	13	6:25 a. m.	11:00 a. m.	1.62	7:03 a. m.	7:47 a. m.	.03	.06	.07	.22	.50	.80	1.00	1.05	1.10	1.15					
New Haven, Conn.	13	4:20 p. m.	D. N. p. m.	1.03	5:05 p. m.	5:18 p. m.	.20	.27	.56	.62											
	3	10:50 a. m.	11:45 a. m.	0.80	10:58 a. m.	11:27 a. m.	.01	.12	.25	.38	.59	.68	.74								
New Orleans, La.	15	2:30 p. m.	6:20 p. m.	1.79	3:17 p. m.	3:51 p. m.	.03	.31	.74	1.04	1.19	1.34	1.49	1.56							
	22	9:40 a. m.	12:25 p. m.	0.83	10:13 a. m.	10:25 a. m.	.07	.20	.42	.51											
New York, N. Y.	22	11:35 a. m.	1:38 p. m.	1.20	4:41 p. m.	11:40 a. m.	T.	.13	.31	.38											
Norfolk, Va.	24-25																				.43
	21	8:40 p. m.	10:30 p. m.	0.57	8:48 p. m.	9:02 p. m.	.02	.21	.42	.50											
	22	5:20 p. m.	7:45 p. m.	1.38	7:09 p. m.	7:29 p. m.	.22	.10	.32	.78</											

TABLE II.—Accumulated amounts of precipitation for each 5 minutes, for the principal storms in which the rate of fall equaled or exceeded 0.25 inch in any 5 minutes, or 0.80 in 1 hour, during July, 1916, at all stations furnished with self-registering gages—Continued.

*Self-register not working.

† Record partly estimated.

† No precipitation occurred during month.

TABLE III.—*Data furnished by the Canadian Meteorological Service, July, 1916.*

Stations.	Altitude above M. S. L.* Jan. 1, 1916.	Pressure.			Temperature of the air.						Precipitation.		
		Station, reduced to mean of 24 hours.	Sealevel, reduced to mean of 24 hours.	Depart- ture from normal.	Mean max. + mean min. + 2.	Depart- ture from normal.	Mean maxi- mum.	Mean mini- mum.	Highest.	Lowest.	Total.	Depart- ture from normal.	Total snowfall.
		Feet.	Inches.	Inches.	° F.	° F.	° F.	° F.	° F.	° F.	Inches.	Inches.	Inches.
St. Johns, N. F.	125	29.80	29.93	-0.01	61.1	+1.8	69.2	53.1	84	46	2.16	-1.73	-----
Sydney, C. B. I.	48	29.94	29.98	+ .05	63.5	+1.2	73.8	53.1	88	38	2.20	-1.45	-----
Halifax, N. S.	88	29.90	30.00	+ .03	65.1	+1.7	74.8	55.5	88	43	2.75	-1.30	-----
Yarmouth, N. S.	65	29.93	30.00	+ .05	58.9	-0.6	65.5	52.3	76	45	3.65	+0.03	-----
Charlottetown, P. E. I.	38	29.92	29.95	+ .03	65.3	+1.2	72.6	58.0	88	50	3.59	+0.10	-----
Chatham, N. B.	28	29.92	29.94	+ .02	67.6	+2.6	78.5	56.6	96	42	4.48	+0.29	-----
Father Point, Que.	20	29.90	29.92	+ .07	60.1	+2.5	69.4	50.9	80	39	1.50	-1.54	-----
Quebec, Que.	296	29.65	29.97	+ .06	70.5	+5.0	89.6	60.4	92	50	2.65	-1.71	-----
Montreal, Que.	187	29.76	29.96	+ .03	73.1	+4.6	82.1	64.2	92	55	2.50	-1.79	-----
Stoncliff, Ont.	450	29.38	29.98	+ .07	71.4	+5.8	86.1	56.8	98	42	3.86	+0.74	-----
Ottawa, Ont.	236	29.71	29.63	+ .09	73.5	+4.0	83.6	63.3	97	53	1.53	-1.04	-----
Kingston, Ont.	285	29.68	29.98	+ .01	72.6	+3.6	80.2	65.0	85	54	1.30	-1.59	-----
Toronto, Ont.	579	29.59	29.93	+ .01	76.0	+8.0	86.6	65.5	100	54	0.36	-2.56	-----
White River, Ont.	1,244	28.68	29.90	+ .02	65.3	+5.8	81.3	49.2	95	34	1.71	-1.08	-----
Port Stanley, Ont.	502	29.27	30.00	+ .02	73.3	+5.5	83.4	63.2	91	52	0.36	-2.68	-----
Southampton, Ont.	636	29.31	29.94	+ .04	71.3	+5.6	80.6	62.1	90	51	0.58	-1.40	-----
Parry Sound, Ont.	688	29.32	30.00	+ .04	74.1	+8.1	86.0	62.3	98	51	0.61	-2.01	-----
Port Arthur, Ont.	644	29.30	29.93	+ .05	68.5	+6.5	79.0	58.0	99	43	2.41	-1.07	-----
Winnipeg, Man.	760	29.10	29.91	-0.02	72.2	+6.2	83.3	61.1	95	48	2.84	-0.24	-----
Minnedosa, Man.	1,690	28.14	29.91	-0.02	68.3	+6.1	79.1	57.6	86	41	4.55	+1.05	-----
Qu'Appelle, Sask.	2,115	27.86	29.86	-0.06	66.8	+3.3	78.5	55.1	87	44	2.13	-0.37	-----
Medicine Hat, Alberta	2,144	27.58	29.81	-0.09	69.7	+1.9	83.3	58.2	93	46	2.70	+0.61	-----
Swift Current, Sask.	2,392	27.33	29.82	-0.07	65.7	+0.2	78.8	54.6	91	44	5.29	+2.85	-----
Calgary, Alberta	3,428	26.39	29.87	-0.05	62.5	+1.9	75.7	49.3	87	38	1.49	-1.19	-----
Banff, Alberta	4,521	25.37	29.88	-0.02	56.9	+0.3	69.0	44.8	84	35	2.74	-0.50	-----
Edmonton, Alberta	2,150	27.38	29.87	-0.07	60.5	-0.1	71.8	49.2	89	38	3.31	+0.28	-----
Prince Albert, Sask.	1,450	28.33	29.86	-0.05	65.1	+4.5	77.0	55.8	86	46	3.88	+1.83	-----
Battleford, Sask.	1,502	28.13	29.87	-0.07	65.9	+1.2	77.1	54.7	89	47	2.11	-0.28	-----
Kamloops, B. C.	1,262	28.70	29.90	-0.04	65.0	-3.5	76.9	53.1	90	43	0.77	-0.84	-----
Victoria, B. C.	230	29.78	30.03	-0.02	57.6	-2.4	64.4	50.8	80	45	1.23	+0.83	-----
Barkerville, B. C.	4,180	25.71	30.00	+ .09	49.7	-5.4	50.4	39.9	75	30	7.92	+4.90	-----
Hamilton, Bermuda	151	30.01	30.17	+ .03	77.0	-1.7	82.4	71.6	85	67	5.50	+1.00	-----

*The altitudes given were furnished by the Director, Canadian Meteorological Service, Mar. 9, 1916, and refer to cisterns of barometers at the respective stations. Where sea-level pressures and departures are *italicized* new reduction factors are in course of computation.—C. A. Jr.

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